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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/754,323 | 01/05/2001 | Masatoshi Akagawa | 1081.1102 | 3680 |

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EXAMINER

NGUYEN, KHIEM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 12/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/754,323

Applicant(s)

AKAGAWA, MASATOSHI

Examiner

Khiem D Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 14-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 14-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

The non-final rejection as set forth in paper No. (6) is withdrawn in response to applicants' amendments.

A new rejection is made as set forth in this Office Action.

Claims (1-6 and 14-17) are pending in the application.

Drawings

The corrected or substitute drawings were received on 9-23-2002. These drawings are accepted by the examiner.

New Grounds of Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akram et al. (U.S. Patent No. 6,235,554) in view of Itabashi et al. (U.S. Patent No. 6,300,244).

Akram teaches a semiconductor device comprising (See col. 3, line 64 to col. 5, line 34 and FIGS. 1-4):

plural pairs of conductor layers 26 having wiring patterns and an insulating layer 46 located thereon (See col. 4, lines 33-44 and FIG. 1); wherein:

a semiconductor element 14 is imbedded inside the insulating layer (See FIG. 1);

the semiconductor element is electrically connected to a wiring pattern of the conductor layer (See FIG. 1); and

a wiring pattern of the conductor layer is electrically connected, by via holes 16, to a wiring pattern of the conductor layer of a different pair of a conductor layer having wiring patterns and an insulating layer located thereon (See FIG. 4).

Akram also discloses in (FIG. 4) wherein two or more semiconductor elements, respectively, are imbedded and mounted inside each of the plurality of insulating layers.

Akram fails to expressly disclose electrically connecting the wiring pattern to the semiconductor element by flip chip mounting and via an anisotropically conductive film as recited in present claims 4-6.

Itabashi discloses in figures 1-11 and related text electrically connecting a wiring pattern to a semiconductor element by flip chip mounting and, inherently, by an anisotropically conductive film (figure 10 and col. 17, lines 10-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Itabashi with the method of Kim in order to provide excellent anti-shock resistance and connection reliability (col. 3, lines 35-45).

It is held that the selection of the semiconductor element thickness is obvious because it is a matter of determining optimum process conditions by routine experimentation with a limited number of species. In re Jones, 162USPQ 224 (CCPA 1955)(the selection of optimum ranges within prior art general conditions is obvious) and In re Boesch, 205 USPQ 215 (CCPA1980)(discovery of optimum value of result effective variable in a known process is obvious).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Akram et al. (U.S. Patent No. 6,235,554).

Akram teaches a semiconductor device comprising (See col. 3, line 64 to col. 5, line 34 and FIGS. 1-4):

a first insulating layer 46 (See FIG. 1);

a first conductive layer 26 having wiring patterns formed under the first insulating layer (See FIG. 1);

a second conductive layer having wiring patterns formed over the first insulating layer, one or more of the wiring patterns of the second conductive layer being electrically connected to one or more of the wiring patterns of the first conductive layer through via holes 16 (See FIGS. 1-4);

at least one semiconductor element 14 imbedded inside the first insulating layer and electrically connected to at least one of the wiring patterns of the first conductive layer and at least one of the wiring patterns of the second conductive layer (See FIG. 4);
and

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a second insulating layer having at least one semiconductor element 14 imbedded therein, the second insulating layer being separated from the first insulating layer by one of the first and second conductor layers, and the at least one semiconductor element of the second insulating layer being electrically connected to one or more of the wiring patterns of the first and second conductor layers (See FIG. 4).

Response to Amendment

Response to Arguments

Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (703) 306-0210. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaudhuri Olik can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9179 for regular communications and (703) 746-9179 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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K.N.
December 13, 2002


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